Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

DECEMBER 2007
(VOLUME 15, NO. 12)
Visit our website at www.ccas.us

Happy Holidays

The Christmas Tree Cluster in Monoceros?
No, it's the Moon over a decorated tree at Longwood Gardens. Taken on November 24, 2007 by Don Knabb.

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DECEMBER 2007
(VOLUME 15, NO. 12)
Editor: James J. Anderson
stargazer1956@comcast.net

In This Issue

Important December 2007 Dates

1 Last Quarter Moon.

7/8 **CCAS Observing Session**
Location: Brandywine Valley Association
Time: sunset, or earlier (see page 10)

9 New Moon.

11 **CCAS Holiday Gathering**
Houlihan's Restaurant at Exton Mall
7:00 p.m. EST.

14 The Geminid Meteor Shower peaks tonight.

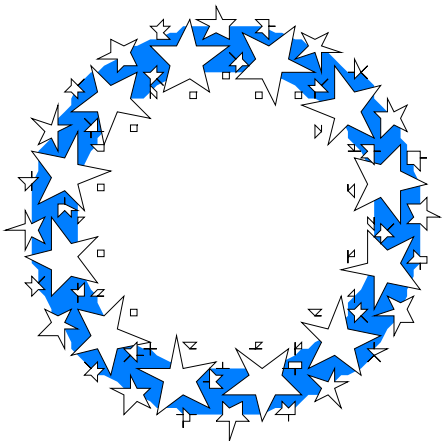
17 First Quarter Moon.

18 Mars reaches its closest approach to Earth until 2016.

22 **Winter Solstice at 1:08 a.m. EST**
Winter starts in Chester County.
Longest night of the year.

23 Full Moon, the Full Cold Moon or the Full Long Nights Moon.

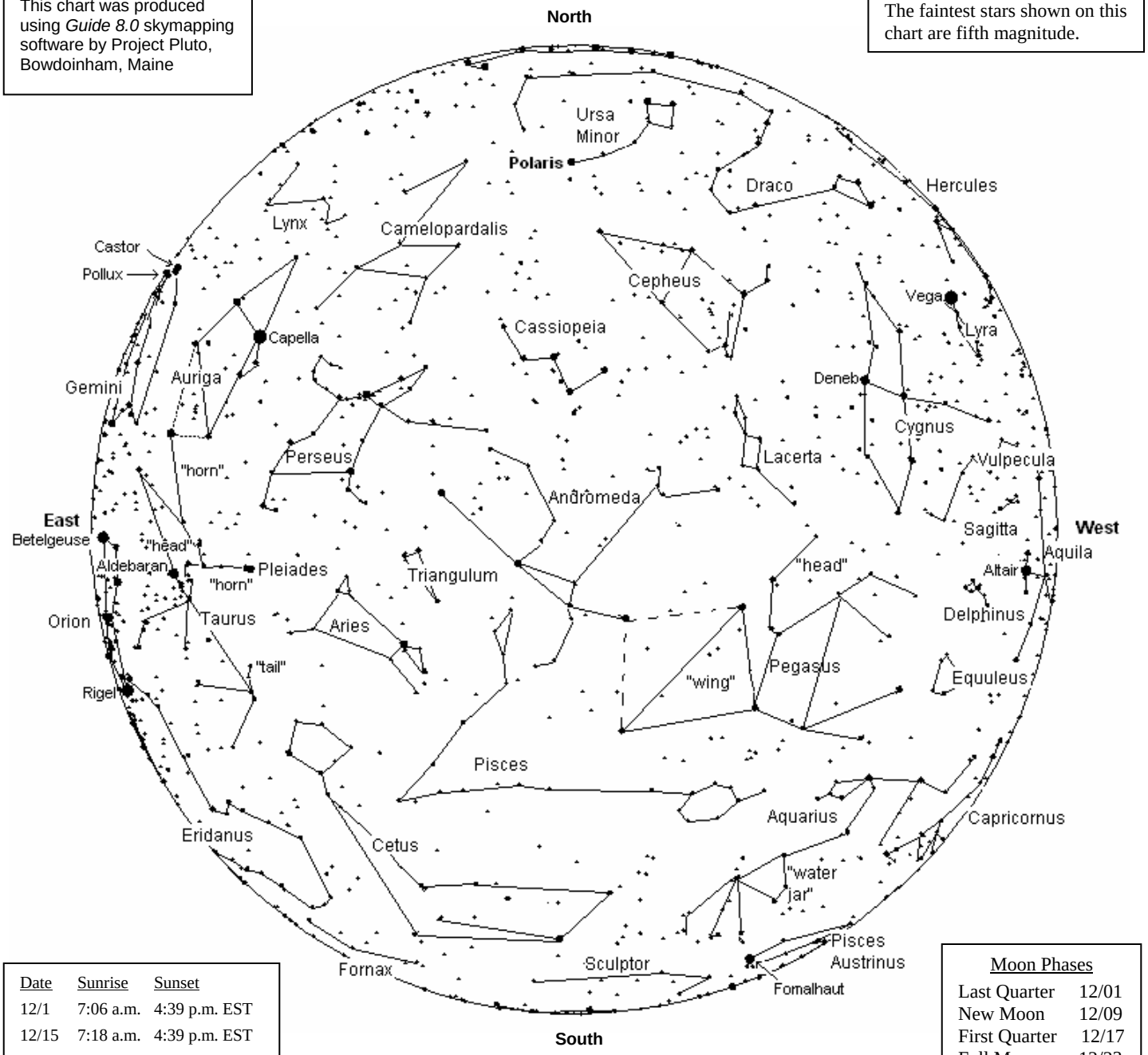
24 Mars is at opposition to the Sun in the sky.



Happy Holidays and Clear Skies to All!

This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



Date	Sunrise	Sunset
12/1	7:06 a.m.	4:39 p.m. EST
12/15	7:18 a.m.	4:39 p.m. EST
12/30	7:25 a.m.	4:47 p.m. EST

Moon Phases	
Last Quarter	12/01
New Moon	12/09
First Quarter	12/17
Full Moon	12/23

The sky over Chester County
December 15, 2007 at 7:00 p.m. EST

The Planets, by Don Knabb

Mercury: Mercury is hidden in the glare of the Sun all of December.

Venus: Venus shines brightly in the southeast as you pick up the paper in the glow of the sunrise.

Mars: Mars is a brilliant orange "star" rising in the east. The Red Planet is at opposition on Christmas Eve and will be a wonderful sight in the eyepiece of your new telescope on Christmas evening. This is the best view of Mars we will have for a long time, so enjoy it. The disk of Mars appears larger than it will for the next nine years.

Jupiter: If you really try you might glimpse Jupiter in the glow of sunset during the first week of the month. After that we say goodbye to the King of the Planets until later in winter.

Saturn: The ringed beauty is rising around 10:30 pm in mid-December, so by Christmas this will be another great target for any new toys if you stay up late enough.

Uranus & Neptune: Both of the outer gas giants are in good viewing position as evening twilight fades. Look in the constellations Aquarius and Capricornus, respectively. The July issue of *Sky and Telescope* has maps to help you find these planets in the southern sky.

Pluto: Distant Pluto is lost in the Sun's glare during December.

Note: the constellation stick figures used on the chart above were adapted from the book *The Stars: A New Way to See Them*, by H. A. Rey. This excellent guide to learning the constellations can be purchased at many area book stores, or from online booksellers.

December Observing Highlights

by Don Knabb, CCAS Observing Chair

Planets: Mars is our astronomical Christmas present this year! The Red Planet shines brighter than any star in the sky and is visible from dusk to dawn if you have a clear horizon. Don't miss the opportunity to stare at our beautiful neighbor of the solar system. While you wait for Mars to get high in the sky, look for Uranus and Neptune in the south. Stay out late after viewing Mars and you will see Saturn rising in the east.

Constellations: Ah, December skies. It's cold enough to be quite clear, but not the freezing, bone chilling cold of January and February. It seems odd to go outside after sunset and still see the Summer Triangle, but indeed there it is diving into the west. But in December my eyes look to the southeast to see the Pleiades and Taurus rising with wonderful Orion not far behind. Clear December skies, a warm coat; life is good!

Deep sky: The Orion Nebula of course leads the list for first light with any new equipment you get for Christmas, but don't forget the clusters in Auriga, M35 in Gemini and the Beehive in Cancer if you stay out late.

Comets: Comet P17/Holmes has all but faded from view in Perseus and may be gone by the time this issue goes to print, but give it a try. Otherwise, Comet 8P/Tuttle will be a nice binocular object during December as it goes right by M33, the Pinwheel Galaxy on December 30.

Meteor shower: The Geminid meteor shower peaks on Friday December 14. This is always a great shower, so be sure to mark your calendar. It's a Friday night, so stay up to midnight when you might see up to 100 meteors per hour!

Dec. 1	Last quarter Moon, 7:44 a.m. EST
Dec. 9	New Moon, 12:40 p.m. EST
Dec. 14	The Geminid meteor shower peaks tonight.
Dec. 17	First quarter Moon, 5:18 a.m. EST
Dec. 18	Mars reaches its closest approach to Earth until 2016.
Dec. 22	Longest night of the year, winter begins at 1:08 a.m. EST.
Dec. 23	Full Moon, 8:16 p.m., the Full Cold Moon or Full Long Nights Moon.
Dec. 24	Mars is at opposition to the Sun in the sky. It rises as the Sun sets, and sets as the Sun rises.

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Through the Eyepiece: Mars, the Red Planet

by Don Knabb, CCAS Observing Chair

I think the most fun object in the night sky to observe during December is Mars. This is a great opportunity to view the Red Planet since its closest approach to Earth is on December 18th and it will therefore appear at its largest in the eyepiece of a telescope. Although it will not approach the size it was during the August 2003 opposition, we have the advantage of it being much higher in the sky. Also, we have the cold, clear December skies to help provide a crisp view, far better than the soup of humidity we often experience during August.

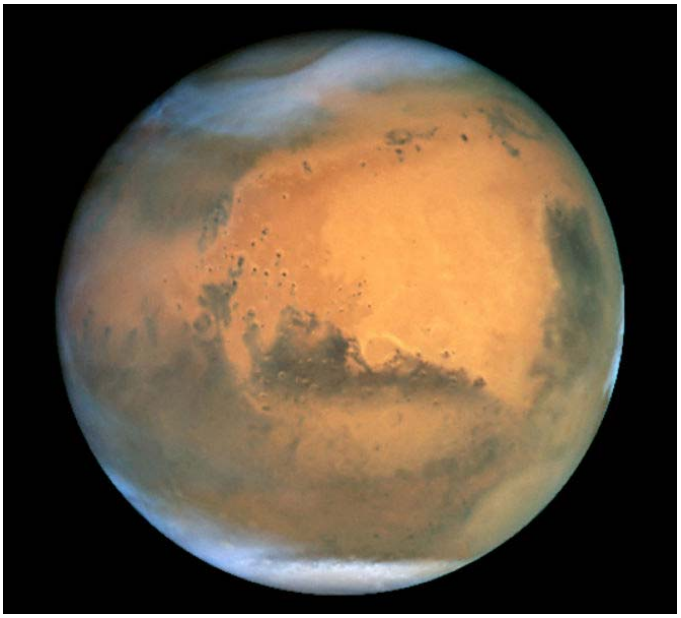


Image source: Hubble Space Telescope

Mars, the fourth planet from the Sun in the Solar System, is named after Mars, the Roman god of war. It is also referred to as the "Red Planet" because of its reddish appearance as seen from Earth. Before humans had telescopes, fear and foreboding rose whenever a blood-red dot looped its way across an otherwise still sky.

Mars is a rocky, or terrestrial planet, with a thin atmosphere. Its surface features are reminiscent both of the impact craters of the Moon and the volcanoes, valleys, deserts and polar ice caps of Earth.

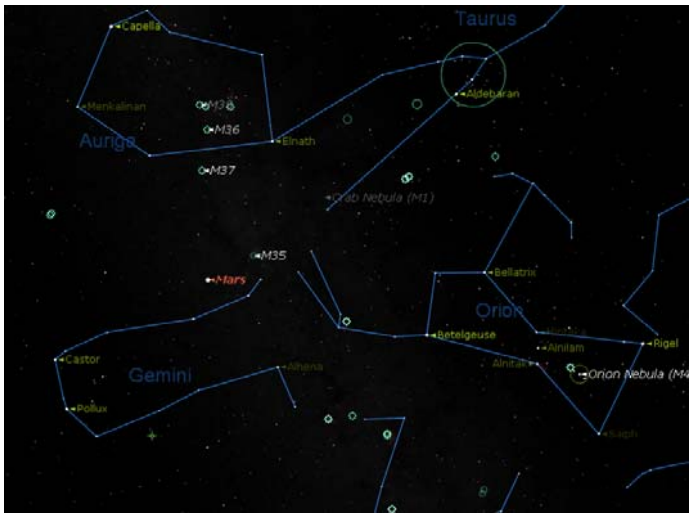
If it was not for the high radiation levels, with a good scuba suit and a warm winter jacket you could walk around on the surface of Mars. Are there places on Earth that are similar to Mars? Yes, the Canadian artic for example, where astronaut suits intended for use on Mars have been tested. Or perhaps Death Valley, California where the geologic features are similar to Mars.

Mars is home to Olympus Mons, the highest known mountain in the solar system, and of Valles Marineris, the largest canyon. In addition to its geographical features, Mars' rotational period and seasonal cycles are likewise similar to those of Earth

To observe Mars during December you can use the chart below from the planetarium program *Starry Night*. But you really do not need a chart. Just go outside around 9:00 p.m. or so and look toward the east. You will immediately see why Mars is called the Red Planet.

It is hard to know how much detail we'll be able to see during the December opposition. The dust storms on Mars are hard to predict. If conditions are good, you

might be able to glimpse the northern ice cap using a 6-inch or larger telescope under good viewing conditions. Take your time at the eyepiece. The more you look, the more you will see as the atmospheric conditions change.



The position of Mars on December 15, 2007, facing the eastern horizon.

So, don't miss this wonderful opportunity to see Mars. It will not be this close to Earth until 2016!

Information sources:
http://mars.jpl.nasa.gov/extreme/
http://en.wikipedia.org/wiki/Mars#Viewing

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CCAS Holiday Gathering

DATE: **Tuesday December 11, 2007**
TIME: **7:00 p.m. EST**
PLACE: Houlihan's Restaurant
LOCATION: Exton Square Mall
Exton, PA

Please note that the Holiday Gathering, which replaces the December meeting, will start at 7:00.

The Executive Committee invites all members to join them for an evening of socializing over good food to celebrate the holidays. We will start gathering at 7:00, so you can order dinner if you wish. Houlihan's Restaurant is located on the south side of the Mall, at the Mall entrance between Boscov's and J.C. Penney. We hope to see you all there!

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CCAS Observing Session December 7/8, 2007

We're at the Brandywine Valley Association for the December Observing Session. The Observing Session will be on Friday December 7, starting at sunset, if the weather is good enough. In case of bad weather ("mostly cloudy" qualifies as bad weather for stargazing, even if it's not raining) then we will observe on Saturday December 8 (if the weather cooperates). If the weather is good both nights, we can observe both nights. You can arrive before sunset to set up if you want to. CCAS Observing Sessions are free and open to the public. You can bring friends and family.

If you have any questions write to **observing@ccas.us** or **dknabb00@comcast.net**, or call Don Knabb at **484-888-1831**. Directions are on page 10.

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Treasurer's Report

by Bob Popovich

Membership Renewals Due

12/2007: no renewals in December.
01/2008: Kovacs
Porreca
Rowan

Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

The current dues amounts are listed in the *CCAS Information Directory* on page in this newsletter.

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New U.S. Postage Stamps with Auroras!

Looking for special stamps for your holiday cards? Why not skip the usual holiday stamps and use these new International Polar Year stamps with beautiful aurora pictures? Note that the real stamps are 41 cent stamps, but these pictures of them were modified by the Postal Service so one cannot print them and use them as real stamps.

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Going My Way?

By Diane K. Fisher

Not many endeavors require that you plan the mode of transportation before you even know what it is you are transporting. But weighing the physics and economics of getting any sort of cargo to space is a major part of designing a space mission.

It's one of the first issues that NASA's New Millennium Program (NMP) considers when planning a new mission. NMP has the forward-looking job to identify promising new technologies for space exploration. It then helps to mature the technology so it will be available to space missions of the future. If the technology cannot be tested adequately on Earth, the last part of this process is to actually send the technology into space. With carefully documented test results, future mission planners can confidently incorporate the new technology into their designs

But where to begin? On call from the start, Linda Herrell is the New Millennium Program Architect. Given a list of proposed technologies, she has the job of figuring out the feasibility of wrapping a mission around them

"We might be considering six or more technologies, anything from solar panels to imagers to masts for solar sails to more intelligent software. Of those, we may choose four. My job is to answer the question—can the selected technology be transported to and operated in space within the constraints of a low-cost technology validation project?"

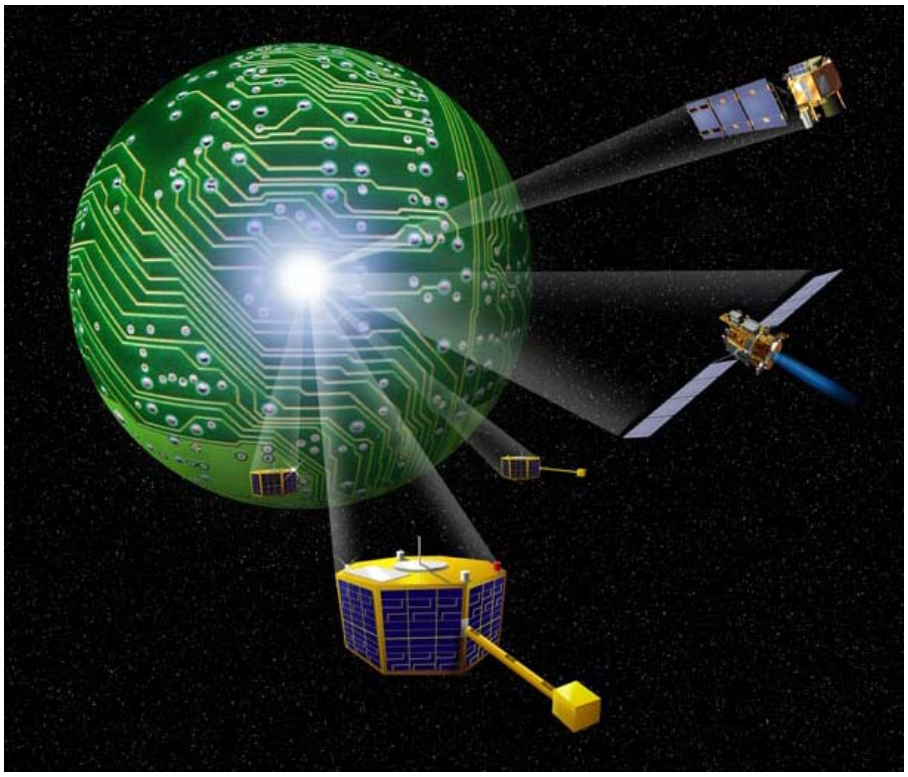
Along with the list of possible mission payloads (the technologies), Linda also has a list of spacecraft to put them on, as well as a list of launch vehicle parameters. **All** she has to do is try them out in every possible combination (of which there are thousands) and see what might work.

"Fortunately, we have a software tool to help with this analysis," says Linda. When it comes down to it, her job is primarily to figure out how to get the technologies into space.

"Sometimes, it's like figuring out how to get across town when you don't have your own car. You have to get creative."

She keeps a database of all possible options, including riding piggyback on another spacecraft, hitching a ride on a launch vehicle as a secondary payload, or sharing a launch vehicle with other NASA, Department of Defense, or even commercial payloads.

Her assessment is but one of a gazillion factors to be considered in planning a mission, but it is indeed one of the very first "details" that forms the foundation for the rest of the mission



NASA's New Millennium Program selects breakthrough technologies that will be of the greatest use to future space and Earth science missions and that are perceived to be risky to the first user.

Find out some of the technologies that NMP has already validated or is considering at:
nmp.nasa.gov/TECHNOLOGY/innovative-tech.html.

Kids will enjoy watching Linda's cartoon alter-ego talk about her job at
spaceplace.nasa.gov/en/kids/live

The preceding article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

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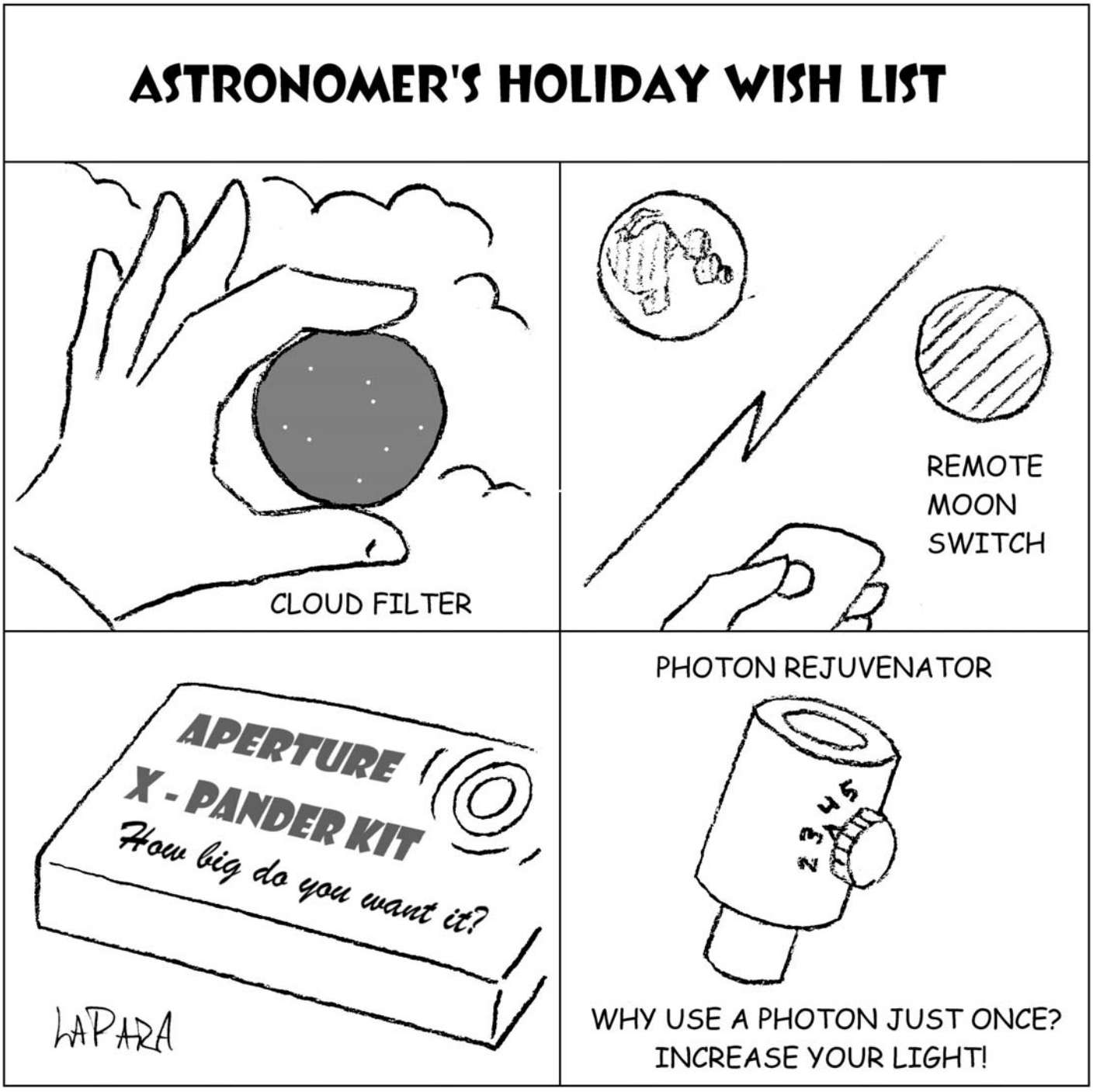

Cartoon by Nicholas La Para

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CCAS Information Directory

Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at $30.00 for one year. Send to:

International Dark-Sky Association
3225 North First Avenue
Tucson, AZ 85719

Telephone: 520-293-3198
Fax: 520-293-3192
E-mail: ida@darksky.org

For more information, including links to helpful information sheets, visit the IDA web site at:

www.darksky.org

Note that our CCAS Webmaster John Hepler has a link to the IDA home page set up on our Society's home page at www.ccas.us.

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

www.POLCouncil.org

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Good Outdoor Lighting Website

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Now there is a web site and business intended to address that very problem. At this site you can find information on all kinds of well-designed (that is, star-friendly) outdoor lighting fixtures. This company, Starry Night Lights, intends to make available all star-friendly fixtures they can find, and information on them, in one place. Check it out, and pass this information on to others. Help reclaim the stars! And save energy at the same time!

http://www.starrynightlights.com/

Local Astronomy Store: *Skies Unlimited*

There is an astronomy equipment store called ***Skies Unlimited*** in our area, in Pottstown to be specific, at:

Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Telephone: 610-327-3500 **or** 888-947-2673

http://www.skiesunlimited.net/

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Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

www.LymePA.org

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent"!

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CCAS Information Directory

CCAS Lending Telescopes

Contact Kathy Buczynski to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Kathy's phone number is 610-436-0821.

CCAS Lending Library

Contact our Librarian, Linda Lurcott Fragale, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings, and on the CCAS website. Linda's phone number is 610-269-1737.

Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to

stargazer1956@comcast.net

Or mail the contribution, typed or handwritten, to:

Jim Anderson
1249 West Kings Highway
Coatesville, PA 19320-1133

Get CCAS Newsletters via E-mail

You can receive the monthly newsletter (**in full color**!) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to Jim Anderson, the newsletter editor, at:

stargazer1956@comcast.net

CCAS Website

John Hepler is the Society's Webmaster. You can check our Website at:

http://www.ccas.us/

John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copying copyrighted material! Give your contributions to John Hepler (484-266-0699) or e-mail to webmaster@ccas.us

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "star nights" for school, scout, and other civic groups.

CCAS Executive Committee

For further information on membership or society activities you may call:

President:	Kathy Buczynski 610-436-0821
Vice Pres:	Jim Anderson 610-857-4751
ALCor and Treasurer:	Bob Popovich 610-363-8242
Secretary:	Don Knabb 610-436-5702
Newsletter:	Jim Anderson 610-857-4751
Librarian:	Linda Lurcott Fragale 610-269-1737
Observing:	Don Knabb 610-436-5702
Education:	Kathy Buczynski 610-436-0821
Webmaster:	John Hepler 484-266-0699
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER $25/year
SENIOR MEMBER .....**$**10/year
STUDENT MEMBER .....**$** 5/year
JUNIOR MEMBER.....**$** 5/year
FAMILY MEMBER.....$35/year

Membership Renewals

Check the Treasurer's Report in each issue of *Observations* to see if it is time to renew your membership. If you are due to renew, you can mail in your renewal check made out to "Chester County Astronomical Society." Mail to:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

Sky & Telescope Magazine Group Rates

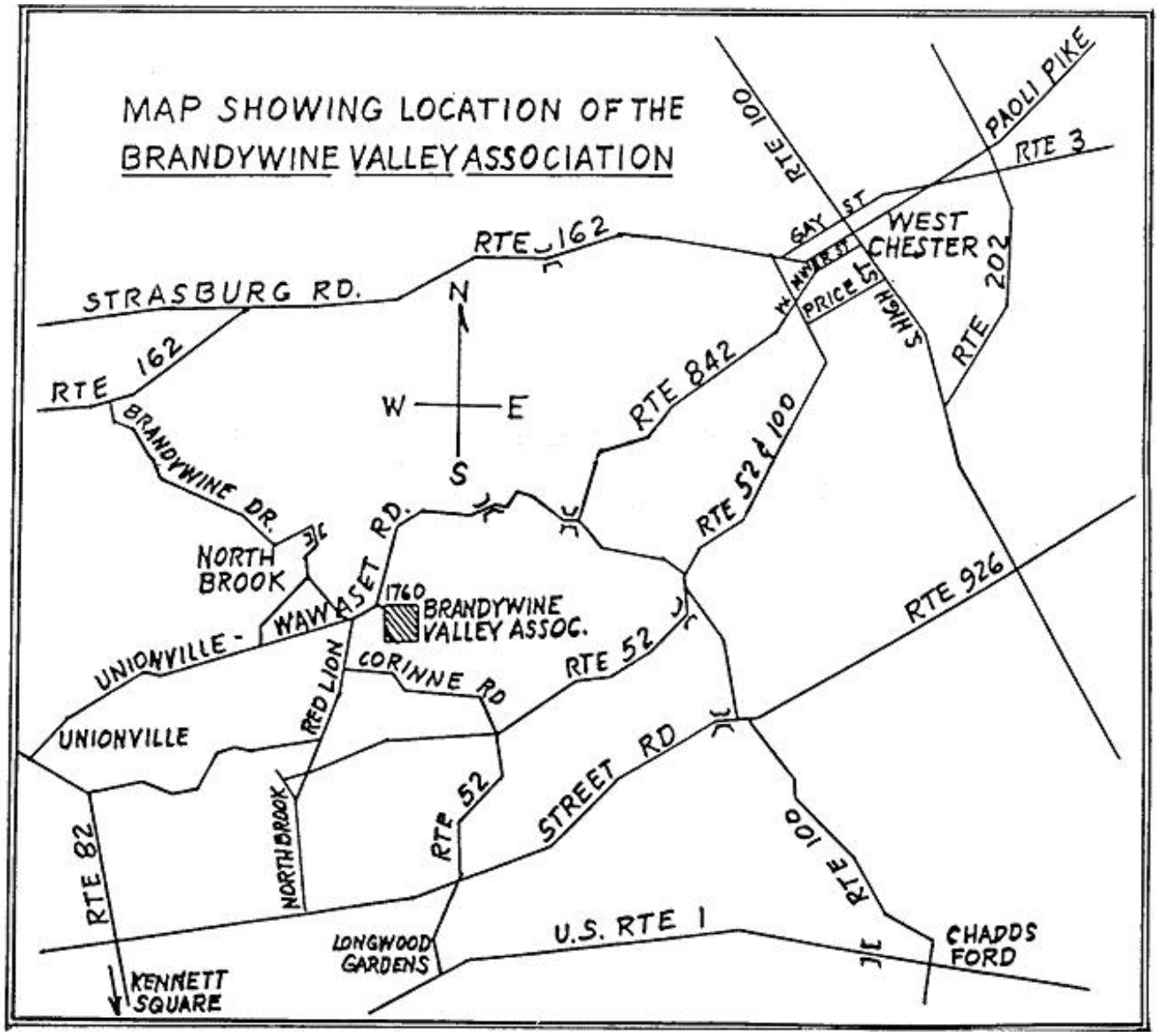
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95** which is much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! To start a subscription, make **sure** you make out the check to the **Chester County Astronomical Society** (do **not** make the check out to Sky Publishing, this messes things up big time), note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. **If you have any questions by all means call Bob first (610-363-8242).** Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

Astronomy Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$34.00** which is much less than the individual subscription price of $42.95 (or $60.00 for two years). If you want to participate in this special Society discount offer, **contact our Treasurer Bob Popovich.**

Phone: 610-363-8242

e-mail: B2N2@verizon.net



To get to the Myrick Conservation Center of the Brandywine Valley Association from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go up the farm lane to the left; it's about 800 feet or so to the top of the hill. If you arrive after dark, please turn off your headlights and just use parking lights as you come up the hill (so you don't ruin other observers' night vision).